

REMARKS

Claims 1-20 were previously pending in this application. No amendments are presented herein. Claims 1-20 remain pending for examination with claim 1 being in independent form.

Rejections Under 35 U.S.C. § 103

Claims 1, 3, 4, 7-15, 17, 19 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Uchida et al. (JP 61-167407) (English translation previously submitted) (hereinafter “Uchida”) in view of Manspeaker (US 2,843,038) (hereinafter “Manspeaker”). Applicants respectfully traverse this ground for rejection.

Uchida fails to disclose, teach, or suggest a method comprising, in part, providing a mould for potting the membrane end, the mould comprising a base comprising an ejector portion and at least one formation for forming at least one opening in the membrane pot, and raising the ejector portion to demould the membrane pot, as recited in independent claim 1. As discussed in a previous response, Uchida discloses a process for the production of a hollow-fiber filtration membrane module utilizing a container 9 including side walls and bottom surface 12. (Uchida translation, page 4, third full paragraph and Fig. 2A.) The method includes installing holes 5 in the bottom surface 12 of the container 9, inserting rods or tubes 11 into the holes 5, and inserting hollow fibers 2 into the container 9 through the container opening. A cross-linking resin is added to the container, covering the bottom of the fibers 2, but not completely covering the rods or tubes 11. The rods/tubes are removed to form throughholes to complete preparation of the filtration module. (Uchida translation, page 3, last paragraph.) Container 9 is intended to be an integral component of the filtration module prepared by Uchida and is therefore not a mould as presently recited. Thus, in contrast to the method of claim 1, not only does Uchida fail to provide a mould, let alone a mould having a base comprising an ejector portion and at least one formation for forming at least one opening in the membrane pot, but Uchida is also silent as to a demoulding step.

One skilled in the art would not have modified container 9 of Uchida to include an ejector portion as asserted in the Office Action because Uchida’s method does not involve demoulding. The proposed modification would impermissibly change a basic principle of how the Uchida process was designed to operate, namely formation of a filtration module without demoulding. Because Uchida does not demould the filtration module after curing, container 9 cannot be a mould as presently recited. Instead of serving as a mould, container 9 is intended to be an

integral component of the filtration module prepared by Uchida. In at least one embodiment, for example, container 9 of Uchida is an acrylic resin container which is filled with an epoxy resin for cross-linking bonding to form the filtration module. (Uchida translation, Brief Explanation of Fig. 2.) Nor does Uchida contemplate a demoulding step. While Uchida specifies that removable rods/tubes 11 inserted to form the throughholes include a nonstick or releasable surface treatment, such as Teflon, no such disclosure is made regarding the material of container 9. (Uchida translation, page 4, third full paragraph.) Upon reading Uchida, one skilled in the art would not have complicated the Uchida process by including an extra step of demoulding.

Moreover, the use of Manspeaker is improper because Manspeaker is nonanalogous art. Manspeaker is generally directed to a bakery assembly in which dough is molded for processing in commercial bakery operations. One skilled in the art would appreciate that the bakery apparatus of Manspeaker is in a different field of endeavor and is not reasonably pertinent to the formation of membrane modules for use in the filtration industry. Due to the lack of commonality between the fields, as well as the unique design demands and constraints associated with membrane filtration modules, one skilled in the art would not have looked to bakery equipment art when seeking to pot membranes as presently recited. For example, one skilled in the art would not have implemented the non-fluid tight ejector of Manspeaker in the Uchida potting container 9 because Uchida utilizes a cross-linking resin prone to leakage.

Even if Uchida and Manspeaker could be combined in the manner asserted, the proposed combination still would not have resulted in a method comprising providing a mould for potting the membrane end, the mould comprising a base comprising an ejector portion and at least one formation for forming at least one opening in the membrane pot. Instead, the combination would have resulted in providing a non-removable potting container as taught by Uchida with a base having one or more features as taught by Manspeaker. Thus, Manspeaker fails to cure deficiencies in Uchida.

As such, independent claim 1 is patentable over Uchida and Manspeaker, either alone or in combination. Claims 3, 4, 7-15, 17, 19 and 20 depend directly or indirectly from claim 1 and are patentable for at least the same reasons.

Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

Claims 1-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Geary (US 3,442,002) (hereinafter “Geary”) in view of Uchida, and further in view of Manspeaker. Applicants respectfully traverse this ground for rejection.

Geary fails to disclose, teach, or suggest, a method comprising, in part, providing a mould comprising a base comprising an ejector portion and at least one formation for forming at least one opening in the membrane pot, and raising the ejector portion to demould the membrane pot, as recited in independent claim 1. As discussed in a previous response, Geary discloses a method of manufacturing a fluid separation apparatus. In Geary, a plurality of hollow filaments is placed in a tubular casing assembly 101, to which a mold unit 905b is bolted to one end. (Geary, col. 21, lines 30-33.) A gasket is positioned between the casing assembly and the mold unit and the mold cavity surrounds the ends of the groups of filaments. The mold unit includes inlet means 908a which communicates with the mold cavity for the supply of the liquid molding material. (Geary, col. 21, lines 44-47.) During rotation of the casing assembly and attached mold, a solidifiable liquid is introduced into the mold cavity. (Geary, col. 21, lines 48-55.) The mold unit is removed from the cast wall member 950, exposing the cast wall member 950 for further processing. (See Figs. 16 and 17.)

One skilled in the art would not have modified the base of Geary’s mold unit 905b to include an ejector portion because such a modification would unnecessarily complicate the design of mold unit 905b. Mold unit 905b is already easily removed from casing assembly 101 via bolts 906 to release cast wall member 950. Nor would an ejector portion be necessary to place openings in the membrane pot assuming *arguendo* that such a modification to Geary would be desirable as asserted in the Office Action. Because the mold of Geary is bolted to the casing assembly containing the filaments, the proposed modification would improperly require substantial reconstruction and redesign of structural elements disclosed by Geary to operably incorporate an ejector portion in the mold base.

Furthermore, as discussed above, use of the nonanalogous Manspeaker citation is improper because one skilled in the art would not have looked to bakery equipment art when seeking to form membrane filtration modules as presently recited. For example, one skilled in the art would recognize that the liquid molding material of Geary would likely leak from the non-fluid tight Manspeaker ejector, particularly due to the centrifugal force applied during rotation of the casing assembly.

One skilled in the art would also not have modified the Geary method to provide openings in the membrane pot as taught by Uchida. In contrast to Geary, Uchida fails to disclose use of a mold or a demolding step and therefore operates under principles inapplicable to Geary. Thus, one skilled in the art would not have modified the Geary mold to incorporate features of the non-removable potting cylinder of Uchida. Furthermore, one skilled in the art would not have modified the Geary method to provide openings in the membrane pot using removable rods/tubes that fit in base holes as taught by Uchida because the setup would be unlikely to withstand the centrifugal force applied during the Geary process.

Even if the references could be combined in the manner asserted, Uchida fails to cure the deficiencies of Geary with respect to the invention as recited in independent claim 1. As noted above, Uchida fails to disclose, teach, or suggest, a method comprising, in part, providing a mould having a base with an ejector portion and raising the ejector portion to demould the pot. Furthermore, because Uchida does not disclose a mould, Uchida cannot disclose a mould comprising at least one formation for forming at least one opening in the membrane pot. Thus, the proposed combination of Geary and Uchida would not have resulted in a mould having a base with formations for forming at least one opening in the membrane pot as presently recited.

As such, independent claim 1 is patentable over the cited combination. Claims 2-20 depend directly or indirectly from independent claim 1 and are therefore patentable for at least the same reasons.

Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, reconsideration is respectfully requested. This application is now in condition for allowance; a notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is invited to call the Applicants' attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50/2762; Ref. M2019-701440.

Respectfully submitted,
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Siemens Docket No.: 2004P87077US
LLA Docket No.: M2019-701440